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20 [LIST OF SUBMITTED ARTICLES]

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25 [NECESSITY OF PROOF] YES

[NAME OF DOCUMENT] SPECIFICATION

[TITLE OF THE INVENTION] MOBILE TERMINAL APPARATUS, MOBILE  
TERMINAL SETTINGS CHANGING SYSTEM, METHOD USED THEREFOR, AND  
PROGRAM THEREOF

5 [CLAIM FOR PATENT]

[CLAIM 1]

A mobile terminal apparatus, comprising:

a contactless IC (integrated circuit) card for use in  
communicating information with external equipment by weak  
10 radio waves, and accumulating authentication information  
from a higher-level apparatus; and

means for changing an ON/OFF operation of the apparatus  
corresponding to an internal mode according to the information  
received from said external equipment through said  
15 contactless IC card.

[CLAIM 2]

The mobile terminal apparatus according to claim 1,  
wherein

the external equipment is a reader/writer capable of  
20 reading and writing information from and to said contactless  
IC card, said reader/writer establishes communications with  
said contactless IC card about said internal mode, and the  
information is reflected by an operation of the apparatus.

[CLAIM 3]

25 The mobile terminal apparatus according to claim 1 or  
2, wherein

the mobile terminal apparatus has a plurality of

internal modes in each of which ON/OFF states of various operations of the apparatus are set in advance, the ON/OFF states of operations corresponding to an internal mode specified by said external equipment are changed.

5     [CLAIM 4]

          The mobile terminal apparatus according to any of claims 1 to 3, wherein

          in said internal mode, ON/OFF states about at least a power source, a sound volume, vibration, and offline can  
10   be freely set.

          [CLAIM 5]

          The mobile terminal apparatus according to any of claims 1 to 4, wherein

          said higher-level apparatus is a ticket issue server  
15   for issuing ticket information for use in authenticating an admission into an institution.

          [CLAIM 6]

          The mobile terminal apparatus according to any of claims 1 to 4, wherein

20        said higher-level apparatus is a certificate authority for issuing an electronic certificate.

          [CLAIM 7]

          A mobile terminal settings changing system, comprising:

25        a higher-level apparatus for issuing authentication information;

          a mobile terminal apparatus comprising a contactless

IC (integrated circuit) card for accumulating authentication information from said higher-level apparatus, and means for changing an ON/OFF operation of the apparatus corresponding to an internal mode according to information received through  
5 said contactless IC card; and

external equipment for communicating information with said contactless IC card by weak radio waves, and transmitting to said contactless IC card the information instructing to perform an ON/OFF operation of said mobile terminal apparatus  
10 corresponding to said internal mode when the authentication information certifies successful authentication.

[CLAIM 8]

The mobile terminal settings changing system according to claim 7, wherein

15 said external equipment is a reader/writer capable of reading and writing information from and to said contactless IC card, the reader/writer establishes communications with said contactless IC card about said internal mode, and the information is reflected by an operation of the apparatus.

20 [CLAIM 9]

The mobile terminal settings changing system according to claim 7 or 8, wherein

said mobile terminal apparatus has a plurality of internal modes in each of which ON/OFF states of various  
25 operations of the apparatus are set in advance, and changes the ON/OFF states of operations corresponding to an internal mode specified by said external equipment.

[CLAIM 10]

The mobile terminal settings changing system according to any of claims 7 to 9, wherein

in said internal mode, ON/OFF states about at least  
5 a power source, a sound volume, vibration, and offline can be freely set.

[CLAIM 11]

The mobile terminal settings changing system according to any of claims 7 to 10, wherein

10 said higher-level apparatus is a ticket issue server for issuing ticket information for use in authenticating an admission into an institution.

[CLAIM 12]

The mobile terminal settings changing system according  
15 to any of claims 7 to 10, wherein

said higher-level apparatus is a certificate authority for issuing an electronic certificate.

[CLAIM 13]

A mobile terminal settings changing method, comprising  
20 the steps of:

receiving information from external equipment through a contactless IC (integrated circuit) card stored in a mobile terminal apparatus for use in communicating information with the external equipment by weak radio waves, and accumulating  
25 authentication information from a higher-level apparatus;  
and

changing an ON/OFF operation of the mobile terminal

apparatus corresponding to an internal mode according to the received information.

[CLAIM 14]

The mobile terminal settings changing method according  
5 to claim 13, wherein

said external equipment is a reader/writer capable of reading and writing information from and to said contactless IC card, said reader/writer establishes communications with said contactless IC card about said internal mode, and the  
10 information is reflected by an operation of the apparatus.

[CLAIM 15]

The mobile terminal settings changing method according to claim 13 or 14, wherein

a plurality of internal modes in each of which ON/OFF  
15 states of various operations of the apparatus are set in advance are provided, and ON/OFF states of operations corresponding to an internal mode specified by said external equipment are changed.

[CLAIM 16]

20 The mobile terminal settings changing method according to any of claims 13 to 15, wherein

in said internal mode, ON/OFF states about at least a power source, a sound volume, vibration, and offline can be freely set.

25 [CLAIM 17]

The mobile terminal settings changing method according to any of claims 13 to 16, wherein

said higher-level apparatus is a ticket issue server for issuing ticket information for use in authenticating an admission into an institution.

[CLAIM 18]

5           The mobile terminal settings changing method according to any of claims 13 to 16, wherein

said higher-level apparatus is a certificate authority for issuing an electronic certificate.

[CLAIM 19]

10           A program used to direct a computer to perform the processes of:

receiving information from external equipment through a contactless IC (integrated circuit) card stored in a mobile terminal apparatus for use in communicating information with  
15 the external equipment by weak radio waves, and accumulating authentication information from a higher-level apparatus;  
and

changing an ON/OFF operation of the mobile terminal apparatus corresponding to an internal mode according to the  
20 received information.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[TECHNICAL FIELD OF THE INVENTION]

The present invention relates to a mobile terminal  
25 apparatus, a mobile terminal settings changing system, a method used therefor, and a program thereof, and more specifically to a method for changing ON/OFF settings of the



power of a mobile terminal apparatus.

[0002]

[PRIOR ART]

That use of mobile terminal apparatuses should be  
5 regulated (kept in the power-off state) depending on the places  
where they are used, for example, public areas such as trains,  
station areas, theaters, hospitals, etc. However, the  
widespread use of mobile terminal apparatuses promotes  
public nuisance by bad manners. This can become more than  
10 bad manners because of the undesired influence of radio waves  
from the mobile terminal apparatus on electric medical  
appliances, etc.

[0003]

Users are supposed to manually power off their own mobile  
15 terminal apparatuses, or set them in a manner mode when  
entering the places (public areas) where the use of these  
mobile terminal apparatuses are regulated. However, this  
rule on a voluntary basis does not work at all.

[0004]

20 Therefore, methods are proposed for automatically  
powering off the mobile terminal apparatuses or setting them  
in the manner mode when they enter public areas (public  
institutions), including: a method of powering off a mobile  
terminal apparatus by generating a sound wave signal when  
25 electromagnetic waves are detected (for example, Patent  
Document 1); a method of powering off a mobile terminal  
apparatus or forcibly setting it in the manner mode by

inserting a mode change command into a perch channel (for example, Patent Document 2); a method of disabling communications depending on the level or the contents of a voice signal (for example, Patent Document 3), etc.

5    [0005]

      [Patent Document 1]

          Japanese Patent Application Laid-open No. 2000-332676  
(pages 3 to 5, FIG. 1)

      [Patent Document 2]

10       Japanese Patent Application Laid-open No. 2001-78263  
(page 4, FIG. 1)

      [Patent Document 3]

          Japanese Patent Application Laid-open No. 2002-158761  
(page 3, FIG. 1)

15    [0006]

      [PROBLEM TO BE SOLVED BY THE INVENTION]

          To allow the mobile terminal apparatuses to be automatically powered off or set in the manner mode when entering public areas (public institutions), the  
20   above-mentioned conventional mobile terminal apparatuses require the equipment for generating a sound wave signal and the equipment for inserting a mode change command into a perch channel mounted in public areas (public institutions), or the performance of the mobile terminal apparatuses themselves  
25   is to be enhanced (for example, a built-in voice recognition system is required).

      [0007]

In the technologies described in the above-mentioned Patent Document 1 and 2, not only the mobile terminal apparatuses of the users entering specific institutions are powered off, but also the mobile terminal apparatuses of the  
5 users who do not enter the specific institutions can be powered off. Furthermore, in the technology described in the Patent Document 3, the mobile terminal apparatuses of the users entering specific institutions cannot necessarily be powered off, but the levels can be erroneously detected or the contents  
10 of voice signals can be erroneously recognized.

[0008]

The present invention aims at solving the above-mentioned problems, and providing a mobile terminal apparatus, a mobile terminal settings changing system, and  
15 a method and a program used for powering off only mobile terminal apparatuses of users entering specific institutions.

[0009]

[MEANS FOR SOLVING THE PROBLEM]

20 A mobile terminal apparatus according to the present invention includes: a contactless IC (integrated circuit) card for use in communicating information with external equipment by weak radio waves, and accumulating authentication information from a higher-level apparatus;  
25 and means for changing an ON/OFF operation of the apparatus corresponding to an internal mode according to the information received from said external equipment through said

contactless IC card.

[0010]

A mobile terminal settings changing system according to the present invention includes: a higher-level apparatus  
5 for issuing authentication information; a mobile terminal apparatus comprising a contactless IC (integrated circuit) card for accumulating authentication information from said higher-level apparatus, and means for changing an ON/OFF operation of the apparatus corresponding to an internal mode  
10 according to information received through said contactless IC card; and external equipment for communicating information with said contactless IC card by weak radio waves, and transmitting to said contactless IC card the information instructing to perform an ON/OFF operation of said mobile  
15 terminal apparatus corresponding to said internal mode when the authentication information certifies successful authentication.

[0011]

A mobile terminal settings changing method according  
20 to the present invention includes: a step of receiving information from external equipment through a contactless IC (integrated circuit) card stored in a mobile terminal apparatus for use in communicating information with the external equipment by weak radio waves, and accumulating  
25 authentication information from a higher-level apparatus; and a step of changing an ON/OFF operation of the mobile terminal apparatus corresponding to an internal mode

according to the received information.

[0012]

A program in a mobile terminal settings changing method according to the present invention is used to direct a computer  
5 to perform: a process of receiving information from external equipment through a contactless IC (integrated circuit) card stored in a mobile terminal apparatus for use in communicating information with the external equipment by weak radio waves, and accumulating authentication information from a  
10 higher-level apparatus; and a process of changing an ON/OFF operation of the mobile terminal apparatus corresponding to an internal mode according to the received information.

[0013]

That is, a mobile terminal apparatus according to the  
15 present invention has a built-in function of a contactless card, and the contactless card detects passage through the gate of a concert hall or a theater, a ticket gate, etc. when the user passes through the gate, the ticket gate, etc. having a built-in reader/writer based on ticket information or  
20 electronic certificate information stored in the function of the contactless card after obtaining the information from a ticket issue server or a certificate authority (CA) in advance, thereby automatically changing the set state of the apparatus (ON/OFF of the power and the manner mode).

25 [0014]

Thus, the mobile terminal apparatus according to the present invention can automatically switch the set state of

the apparatus in a restricted place. Therefore, only the mobile terminal apparatus of a user entering a specific institution can be powered off or set in the manner mode, etc.

5     [0015]

[PREFERRED EMBODIMENTS OF THE INVENTION]

The embodiments of the present invention are described below by referring to the attached drawings. FIG. 1 is a block diagram of the configuration of a mobile terminal apparatus according to an embodiment of the present invention. In FIG. 1, the mobile terminal apparatus according to the embodiment of the present invention comprises an operation unit 11 for accepting an operation on a terminal operation, a display unit 12 for displaying necessary information, a notification unit 13 for giving various notifications by a signal tone and vibration, a contactless IC (integrated circuit) card 15, a transmission/reception unit 16 for performing the transmission/reception of radio communications, a memory 17 for holding a program for terminal operations (a program that can be executed on the computer) and settings, and a control unit 14 for executing the program in the memory 17 and controlling the operations of the above-mentioned units.

[0016]

25     FIG. 2 shows a changing operation of the settings of the mobile terminal apparatus shown in FIG. 1. FIG. 3 shows the system of the changing operation of the settings of the

mobile terminal apparatus shown in FIG. 2. FIG. 4 is a sequential chart showing the communications of a signal in the system of the changing operation shown in FIG. 3. FIG. 5 is a flowchart of the changing operation of the settings of the mobile terminal apparatus shown in FIG. 1. The changing operations of the settings of the mobile terminal apparatus according to the embodiment of the present invention are describe below by referring to FIGS. 1 through 5. The process shown in FIG. 5 is realized by the control unit 14 executing the program in the memory 17.

[0017]

Described below is a series of user operations of changing the set state (ON/OFF of the power and the manner mode) of the mobile terminal apparatus 1 using the built-in contactless IC card 15 in the mobile terminal apparatus 1. In the present embodiment, it is assumed that a ticket for admission into a concert hall, theater, stadium, etc. is required, and the information about the ticket (for example, a starting time, a seat number, etc.) is stored on the contactless IC card 15.

[0018]

In this case, a holder (user) of the mobile terminal apparatus 1 reserves and purchases in advance a ticket of a concert hall, theater, stadium, etc., obtains the information about the ticket from a ticket issue server 4 through a base station 3 and a network 100 using the mobile terminal apparatus 1, and stores the information on the

contactless IC card 15 (refer to (a) shown in FIG. 2).

[0019]

The holder (user) of the mobile terminal apparatus 1 goes to the concert hall, theater, etc. on the date of the concert, etc., and puts the mobile terminal apparatus 1 having the contactless IC card 15 over a reader/writer 2 mounted in the gate of the concert hall, theater, stadium, etc. (refer to (b) shown in FIG. 2). Then, the settings of the mobile terminal apparatus 1 is automatically rewritten according to the information from the reader/writer 2 (refer to (c) shown in FIG. 2), and thus the set state (ON/OFF of the power and the manner mode) of the mobile terminal apparatus 1 is changed.

[0020]

That is, since no problems occur if there is no schedule changes in the concert, live performance, play, contents of a performance (of a play, reading, play of a storyteller, etc.) in the concert hall, theatre or stadium, etc., the set state of the mobile terminal apparatus 1 is at least the manner mode in which the mobile terminal apparatus 1 is in the no-tone mode when it receives a call. Therefore, the mobile terminal apparatus 1 is set in the manner mode according to the information from the reader/writer 2.

[0021]

Thus, according to the present embodiment, the set state of the mobile terminal apparatus 1 can be automatically changed in a restricted place. Therefore, only the mobile terminal



apparatus 1 of the user entering the place can be powered off or set in the manner mode. Additionally, in the present embodiment, the settings of the mobile terminal apparatus 1 can be simultaneously rewritten when the user is checked  
5 when entering the concert hall, theater, stadium, etc.

[0022]

Furthermore, according to the present embodiment, only the reader/writer 2 is to be mounted at the gate of the concert hall, theater, stadium, etc. Therefore, the set state of  
10 the mobile terminal apparatus 1 can be automatically changed in a restricted place by a simple facility.

[0023]

The above-mentioned system of changing the set state of the mobile terminal apparatus 1 by the reader/writer 2  
15 is describe below by referring to FIGS. 3 and 4. The holder (user) of the mobile terminal apparatus 1 is assumed to operate the operation unit 11 to set in advance the mobile terminal apparatus 1 in the "restricted place mode (in which a plurality of settings can be collectively managed)".

20 [0024]

If the mobile terminal apparatus 1 with the above-mentioned settings approaches or contacts the reader/writer 2, the reader/writer 2 transmits to the mobile terminal apparatus 1 a signal a1 (ticket information  
25 confirmation signal) to check whether or not the mobile terminal apparatus 1 stores the ticket information.

[0025]

If the mobile terminal apparatus 1 stores the ticket information on the contactless IC card 15, the ticket information a2 is transmitted to the reader/writer 2. Then, the reader/writer 2 makes an authentication check on the ticket information (refer to a3 shown in FIG. 4). If the information is authenticated, the reader/writer 2 transmits to the contactless IC card 15 a signal a4 (automatic mode change correspondence information) indicating that the reader/writer 2 has the automatic mode change function.

10 [0026]

Upon receipt of the signal, the contactless IC card 15 transmits to the reader/writer 2 a mode ON/OFF information acquisition request a5 to acquire the mode ON/OFF information. In response to the request, the reader/writer 2 transmits to the contactless IC card 15 a signal a6 (mode ON/OFF information) for switching ON/OFF of the set state (mode) of the mobile terminal apparatus 1 (refer to "a" shown in FIG. 3). Upon receipt of the mode ON/OFF information, the contactless IC card 15 transmits the mode ON/OFF information to the control unit 14 of the mobile terminal apparatus 1 (refer to "b" shown in FIG. 3).

[0027]

The operation performed inside the mobile terminal apparatus 1 is described below by referring to FIG. 5. In the mobile terminal apparatus 1, when the control unit 14 correctly receives from the contactless IC card 15 the ON/OFF information about the settings (step S1 shown in FIG. 5),

it performs the ON/OFF switch of the "restricted place mode (in which a plurality of settings can be collectively managed)" (step S2 shown in FIG. 5), and the settings are stored in the memory 17 (step S3 shown in FIG. 5).

5     [0028]

Furthermore, the control unit 14 controls the display unit 12 to display that the mode has been switched (step S4 shown in FIG. 5), and information that the mode is being set is displayed on the display unit 12 (step S5 shown in FIG. 10     5).

          [0029]

Thus, according to the present embodiment, when a user enters a restricted place, that is, a concert hall, theater, stadium, etc., the user only has to put the mobile terminal 15     apparatus 1 over the reader/writer 2 to automatically switch the set state without manually setting functions such as the function of "automatically cutting off radio waves" and the like.

          [0030]

20         The functions of the mobile terminal apparatus 1 are switched by communicating information between the contactless IC card 15 and the reader/writer 2, and desired functions can be collectively set. Furthermore, according to the present embodiment, it is not necessary for the user 25     to operate the mobile terminal apparatus 1 when the user enters a restricted place, thereby avoiding failing to set or reset the mobile terminal apparatus 1. When the settings changed

at the entrance are reset, the user is to put the mobile terminal apparatus 1 again over the reader/writer 2 at the exit.

[0031]

According to the present embodiment, the operation performed when a user enters a concert hall, theater, stadium, etc. is described. However, it can be applied when a ticket is reserved and purchased for a flight, movie theater, train, etc., and also for a hospital, etc. having a consultation ticket issued.

10 [0032]

FIG. 6 shows a changing operation of the settings of the mobile terminal apparatus according to another embodiment of the present invention. FIG. 7 is a sequential chart showing the communications of a signal in the system of the changing operation shown in FIG. 6. According to another embodiment of the present invention, it has the same configuration as the system shown in FIG. 2 except that certificate authority (CA) 5 for issuing an electronic certificate on behalf of the ticket issue server 2 is mounted, and the same components are assigned the corresponding reference numerals.

20 [0033]

The configuration of the mobile terminal apparatus according to another embodiment has the same configuration as the mobile terminal apparatus 1 according to the embodiment of the present invention shown in FIG. 1. The changing operation of the settings of the mobile terminal apparatus according to another embodiment of the present invention is

described below by referring to FIGS. 1, 6, and 7.

[0034]

A series of user operations of changing the set state (ON/OFF of the power and the manner mode) of the mobile terminal apparatus 1 using the built-in contactless IC card 15 in the mobile terminal apparatus 1 is described below. In the present embodiment, when entering a concert hall, theater, stadium, etc. a holder (user) of the mobile terminal apparatus 1 records in the certificate authority 5 in advance, and the electronic certificate issued by the certificate authority 5 is stored on the contactless IC card 15.

[0035]

In this case, the holder (user) of the mobile terminal apparatus 1 obtains an electronic certificate issued by the certificate authority 5 through the base station 3 and the network 100 using the mobile terminal apparatus 1, and the information is stored on the contactless IC card 15 (refer to (d) shown in FIG. 6).

[0036]

When the holder (user) of the mobile terminal apparatus 1 puts the mobile terminal apparatus 1 containing the contactless IC card 15 over the reader/writer 2 mounted in the gate of a concert hall, theater, stadium, etc. (refer to (e) shown in FIG. 6), the settings of the mobile terminal apparatus 1 are automatically rewritten according to the information from the reader/writer 2 (refer to (f) shown in FIG. 6), and the set state (ON/OFF of the power and the manner

mode) of the mobile terminal apparatus 1 is changed.

[0037]

That is, since no problems occur if there is no schedule changes in the concert, live performance, play, contents of  
5 a performance (of a play, reading, play of a storyteller, etc.) in the concert hall, theatre or stadium etc., the set state of the mobile terminal apparatus 1 is at least the manner mode in which the mobile terminal apparatus 1 is in the no-tone mode when it receives a call. Therefore, the mobile terminal  
10 apparatus 1 is set in the manner mode according to the information from the reader/writer 2.

[0038]

Thus, according to the present embodiment, the set state of the mobile terminal apparatus 1 can be automatically changed  
15 in a restricted place. Therefore, only the mobile terminal apparatus 1 of the user entering the place can be powered off or set in the manner mode. Furthermore, according to the present embodiment, only the reader/writer 2 is to be mounted at the gate of the concert hall, theater, stadium,  
20 etc. Therefore, the set state of the mobile terminal apparatus 1 can be automatically changed in a restricted place by a simple facility.

[0039]

The above-mentioned system of changing the settings  
25 of the mobile terminal apparatus 1 by the reader/writer 2 is describe below by referring to FIG. 7. The holder (user) of the mobile terminal apparatus 1 is assumed to operate the

operation unit 11 to set in advance the mobile terminal apparatus 1 in the "restricted place mode (in which a plurality of settings can be collectively managed)".

[0040]

5           If the mobile terminal apparatus 1 with the above-mentioned settings approaches or contacts the reader/writer 2, the reader/writer 2 transmits to the mobile terminal apparatus 1 a signal a11 (certificate information confirmation signal) to check whether or not the mobile  
10 terminal apparatus 1 stores the electric certificate information.

[0041]

          If the mobile terminal apparatus 1 stores the certificate information on the contactless IC card 15, the  
15 certificate information (electronic certificate) a12 is transmitted to the reader/writer 2. Then, the reader/writer 2 makes an authentication check on the certificate information (refer to a13 shown in FIG. 7). If the information is authenticated, the reader/writer 2 transmits to the  
20 contactless IC card 15 a signal a14 (automatic mode change correspondence information) indicating that the reader/writer 2 has the automatic mode change function.

[0042]

          Upon receipt of the signal, the contactless IC card  
25 15 transmits to the reader/writer 2 a mode ON/OFF information acquisition request a15 to acquire the mode ON/OFF information. In response to the request, the reader/writer 2 transmits

to the contactless IC card 15 a signal a16 (mode ON/OFF information) for switching ON/OFF of the set state (mode) of the mobile terminal apparatus 1. Upon receipt of the mode ON/OFF information, the contactless IC card 15 transmits the  
5 mode ON/OFF information to the control unit 14 of the mobile terminal apparatus 1.

[0043]

Thus, according to the present embodiment, when a user enters a restricted place, that is, a concert hall, theater,  
10 stadium, etc., the user only has to put the mobile terminal apparatus 1 over the reader/writer 2 to automatically switch the set state without manually setting functions such as the function of "automatically cutting off radio waves" and the like.

15 [0044]

The functions of the mobile terminal apparatus 1 are switched by communicating information between the contactless IC card 15 and the reader/writer 2, and desired functions can be collectively set. Furthermore, according  
20 to the present embodiment, it is not necessary for the user to operate the mobile terminal apparatus 1 when the user enters a restricted place, thereby avoiding failing to set or reset the mobile terminal apparatus 1. When the settings changed at the entrance are reset, the user is to put the mobile terminal  
25 apparatus 1 again over the reader/writer 2 at the exit.

[0045]

Furthermore, since the authentication of the mobile



terminal apparatus 1 can be confirmed by the electronic certificate issued by the certificate authority 5 according to the present embodiment, the above-mentioned ticket information can be encrypted using the electronic certificate.

[0046]

According to the present embodiment, the operation performed when a user enters a concert hall, theater, stadium, etc. is described. However, it can be applied when a ticket is reserved and purchased for a flight, movie theater, train, etc., and also for a hospital, etc. having a consultation ticket issued.

[0047]

FIG. 8 shows the settings for each mode according to another embodiment of the present invention. FIG. 9 is a flowchart of a changing operation of the settings of the mobile terminal apparatus according to another embodiment of the present invention. The configuration of the mobile terminal apparatus according to another embodiment of the present invention has the same configuration as the mobile terminal apparatus 1 according to the embodiment of the present invention shown in FIG. 1. The configuration of the system according to another embodiment of the present invention has the same configuration as the system according to the embodiment of the present invention shown in FIG. 2. The changing operation of the settings of the mobile terminal apparatus according to another embodiment of the present

invention is described below by referring to FIGS. 1, 8 and 9. The process shown in FIG. 9 is realized by the control unit 14 executing the program in the memory 17.

[0048]

5           According to the present embodiment, the mobile terminal apparatus 1 has a plurality of "restricted place modes (in which a plurality of settings can be collectively managed)", which can be applied to a method of switching into an appropriate mode depending on the situation. The  
10 operation of setting to a specified mode is described below by referring to FIGS. 1, 8 and 9.

[0049]

First, using the operation unit 11 of the mobile terminal apparatus 1, the "restricted place modes (in which a plurality  
15 of settings can be collectively managed)" are set including a plurality of modes such as a hospital mode, a train mode, a concert mode (rock, classical, etc.). In the following explanation, two modes, that is, mode #1 (: hospital mode) and mode #2 (: concert mode), are preset in the mobile terminal  
20 apparatus 1 as shown in FIG. 8. The pertaining information is stored in the memory 17. The settings of these modes can be changed by a user.

[0050]

In FIG. 8, in the mode #1 (:hospital mode), the sound  
25 volume relation is set to OFF, the vibration is set to OFF, and the offline is set to ON. In the mode #2 (:concert mode), the sound volume relation is set to OFF, the vibration is

set to ON, and the offline is set to OFF.

[0051]

The operations of the sound volume relation function and the vibration function are performed by the notification unit 13, the operation of the offline function is performed by the transmission/reception unit 16, and the notification unit 13 and the transmission/reception unit 16 are controlled by the control unit 14.

[0052]

When the mobile terminal apparatus 1 set in the above-mentioned mode approaches or contacts the reader/writer 2, the reader/writer 2 transmits a ON/OFF information about the specified mode (mode #2) to the contactless IC card 15. The contactless IC card 15 transmits the information to the control unit 14.

[0053]

Upon receipt of the ON/OFF information about the specified mode (mode #2) from the contactless IC card 15 (step S11 shown in FIG. 9), the control unit 14 switches the ON/OFF of the mode (mode #2) (step S13 shown in FIG. 9) if the specified mode (mode #2) is stored in the memory 17 (step S12 shown in FIG. 9).

[0054]

If the specified mode (mode #2) is not stored in the memory 17 (step S12 shown in FIG. 9), and if a plurality of set states are not implemented (step S17 shown in FIG. 9), the control unit 14 switches the ON/OFF state of the one

implemented mode (step S18 shown in FIG. 9).

[0055]

If a plurality of set states are implemented (step S17 shown in FIG. 9), but the specified mode is not included, then the control unit 14 switches the ON/OFF state of the mode #1 (in which most strict regulation is instituted) (step S19 shown in FIG. 9).

[0056]

After the above-mentioned process, the control unit 14 stores the specified set state in the memory 17 (step S14 shown in FIG. 9), and the information about the switch into the mode is displayed on the display unit 12 (step S15 shown in FIG. 9), and the notification that the mode is being set is displayed on the display unit 12 (step S16 shown in FIG. 9).

[0057]

Thus, according to the present invention, the mobile terminal apparatus 1 has a plurality of "restricted place modes (in which a plurality of settings can be collectively managed)", which can switch into an appropriate mode depending on the situation.

[0058]

In the explanation above, ticket information and certificate information are used, but member information, etc. issued by predetermined organizations (public organizations and private organizations) can be used. That is, the present invention is not limited to specified

applications.

[0059]

[EFFECT OF THE INVENTION]

As described above, a mobile terminal apparatus  
5 according to the present invention can obtain the effect that  
only the mobile terminal apparatus of a user entering a  
specific institution can be powered off without fail by  
providing a contactless IC card for use in communicating  
information with external equipment by weak radio waves, and  
10 accumulating authentication information from a higher-level  
apparatus, and means for changing an ON/OFF operation of the  
apparatus corresponding to an internal mode according to the  
information received from the external equipment through the  
contactless IC card.

15 [BRIEF DESCRIPTION OF THE DRAWINGS]

[FIG.1]

FIG. 1 is a block diagram of the configuration of a  
mobile terminal apparatus according to an embodiment of the  
present invention.

20 [FIG.2]

FIG. 2 shows a changing operation of the settings of  
the mobile terminal apparatus shown in FIG. 1.

[FIG.3]

FIG. 3 shows the system of the changing operation of  
25 the settings of the mobile terminal apparatus shown in FIG.  
2.

[FIG.4]

FIG. 4 is a sequential chart showing the communications of a signal in the system of the changing operation shown in FIG. 3.

[FIG.5]

5        FIG. 5 is a flowchart of the changing operation of the settings of the mobile terminal apparatus shown in FIG. 1.

[FIG.6]

FIG. 6 shows a changing operation of the settings of the mobile terminal apparatus according to another embodiment of the present invention.

[FIG.7]

FIG. 7 is a sequential chart showing the communications of a signal in the system of the changing operation shown in FIG. 6.

15      [FIG.8]

FIG. 8 shows the settings in each mode according to another embodiment of the present invention.

[FIG.9]

FIG. 9 is a flowchart showing a changing operation of the settings of the mobile terminal apparatus according to another embodiment of the present invention.

[DESCRIPTION OF REFERENCE NUMERALS]

- 1    MOBILE TERMINAL APPARATUS
- 2    READER/WRITER
- 25 3    BASE STATION
- 4    TICKET ISSUE SERVER
- 5    CERTIFICATE AUTHORITY

	11	OPERATION UNIT
	12	DISPLAY UNIT
	13	NOTIFICATION UNIT
	14	CONTROL UNIT
5	15	CONTACTLESS IC CARD
	16	TRANSMISSION/RECEPTION UNIT
	17	MEMORY
100		NETWORK

[NAME OF DOCUMENT] ABSTRACT

[ABSTRACT]

[PROBLEM]

5 A settings changing system can power off only a mobile  
terminal apparatus of a user entering a specific institution  
without fail.

[MEANS FOR SOLVING THE PROBLEM]

10 A mobile terminal apparatus 1 obtains ticket  
information from a ticket issue server 4 through a base station  
3 and a network 100, and stores the information on a built-in  
contactless IC card. When the mobile terminal apparatus 1  
is put over a reader/writer 2 mounted in the gate of a concert  
hall, theater, stadium, etc., the settings of the mobile  
terminal apparatus 1 are automatically rewritten according  
15 to information from the reader/writer 2 through the  
contactless IC card, and the set state (ON/OFF of the power  
and the manner mode) of the mobile terminal apparatus 1 is  
changed.

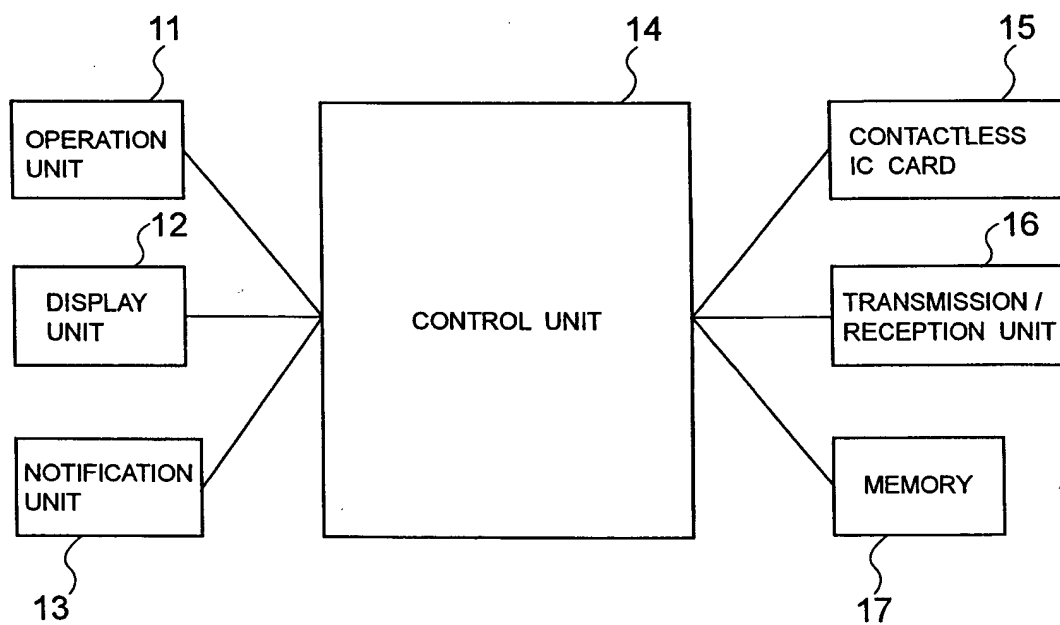
[SELECTED DRAWING] FIG. 2



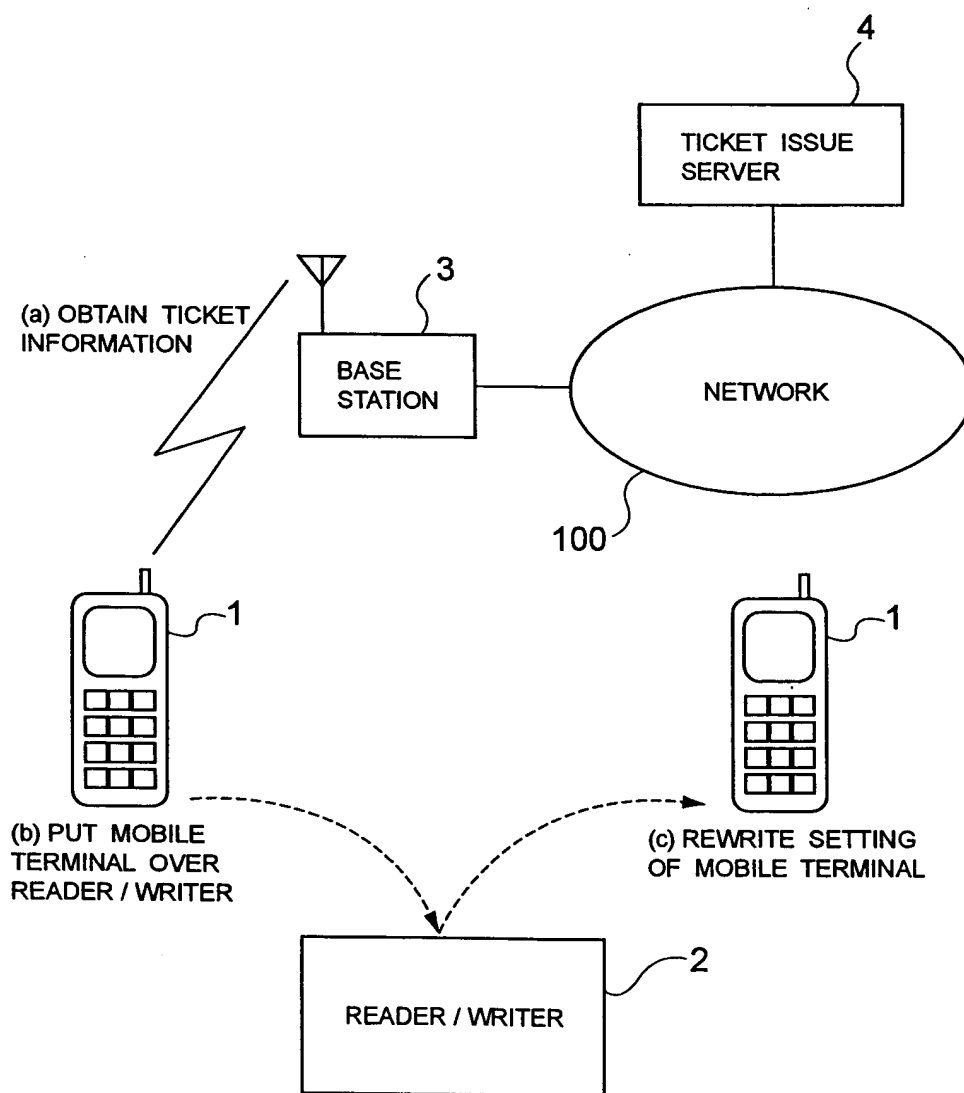


[NAME OF DOCUMENT] DRAWING

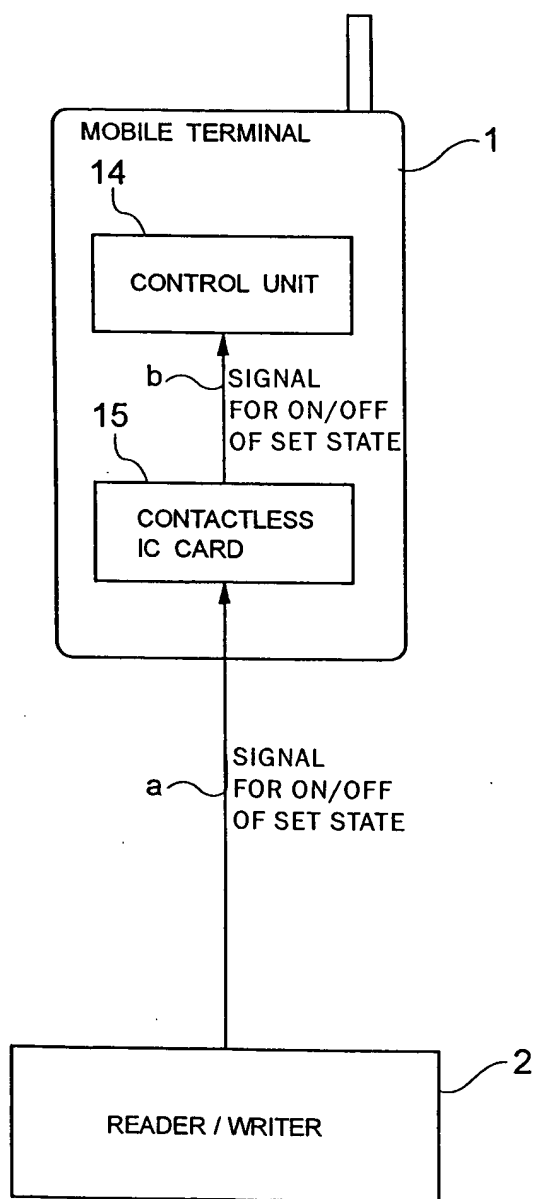
[FIG. 1]



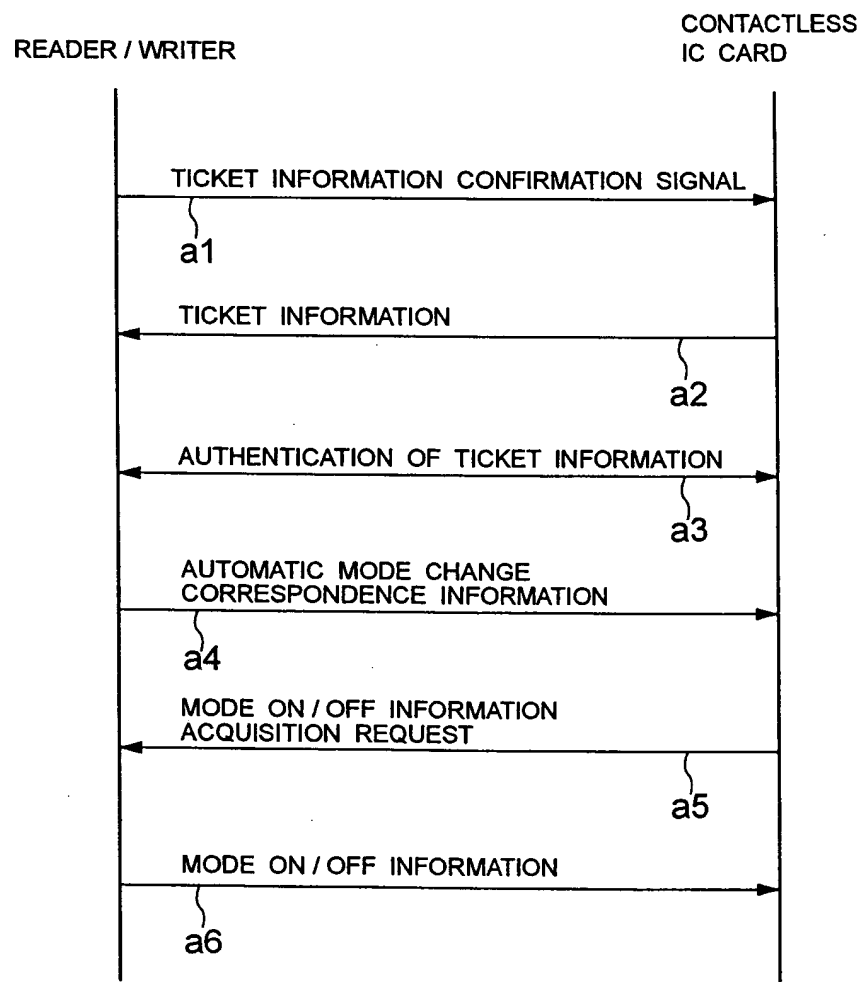
[FIG. 2]



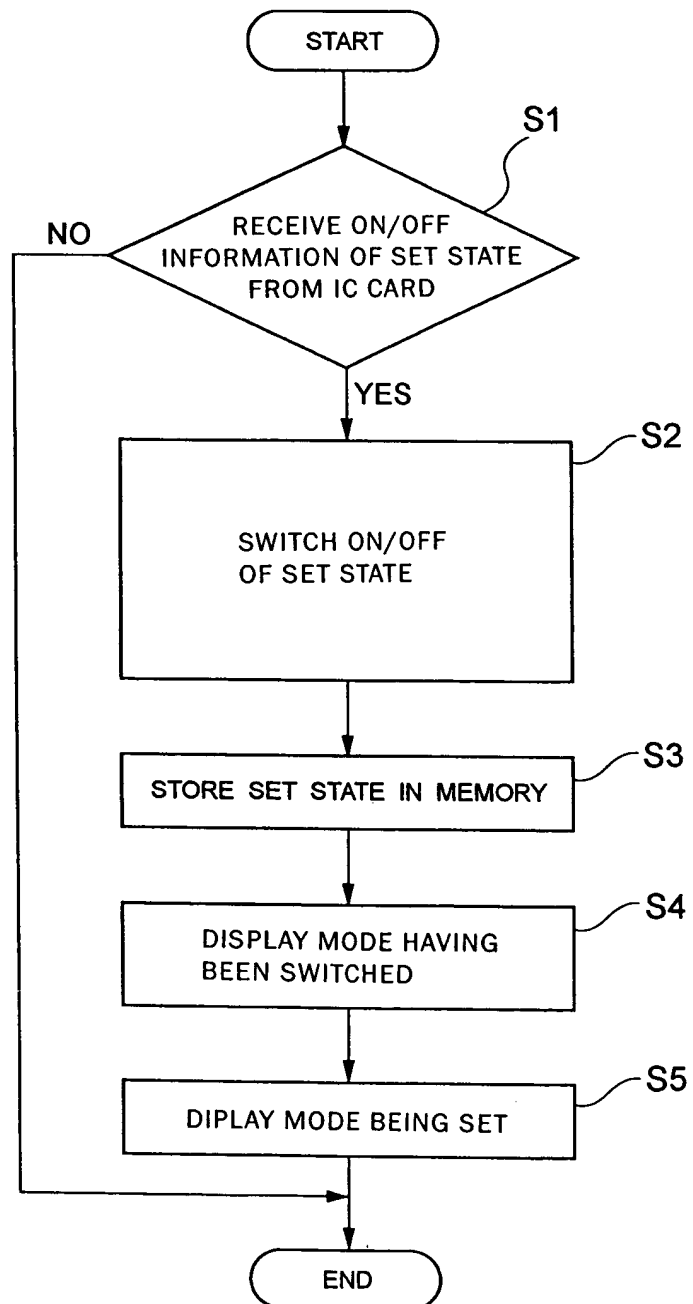
[FIG. 3]



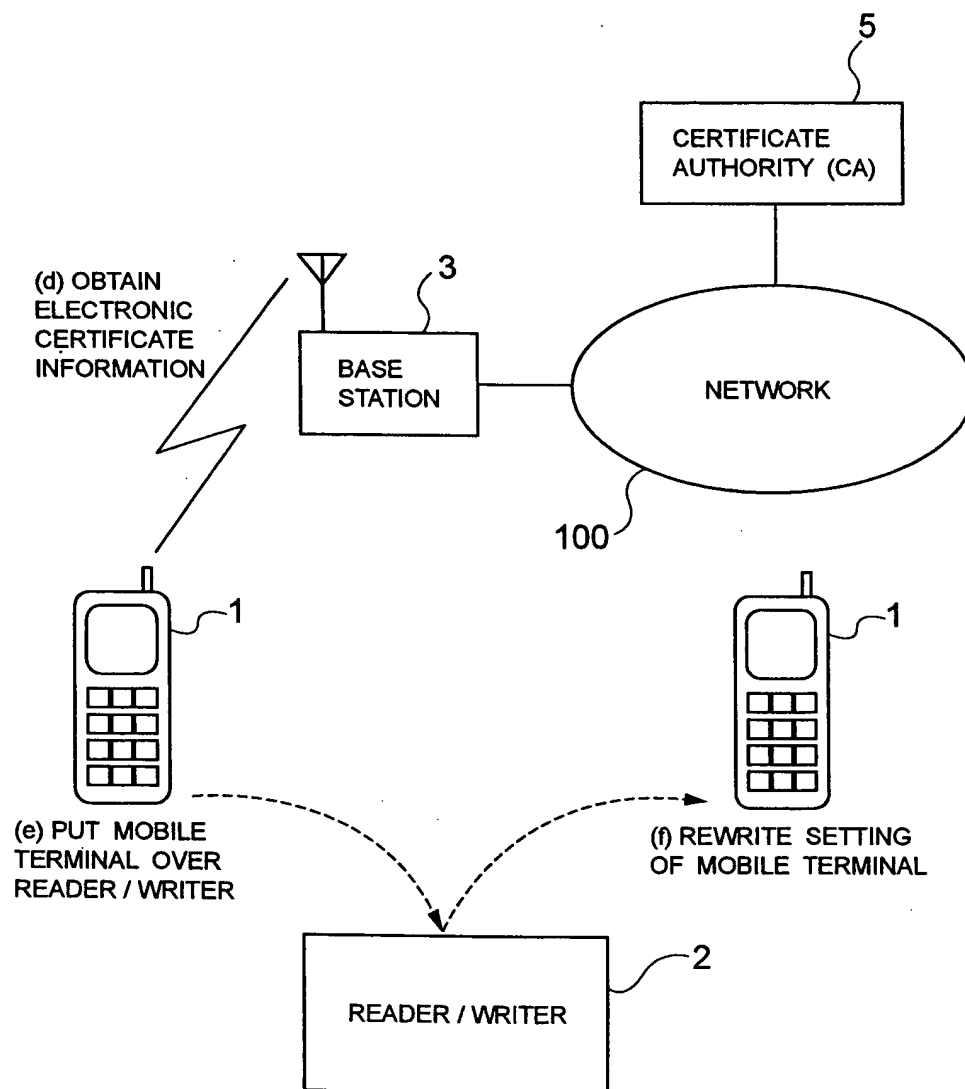
[FIG. 4]



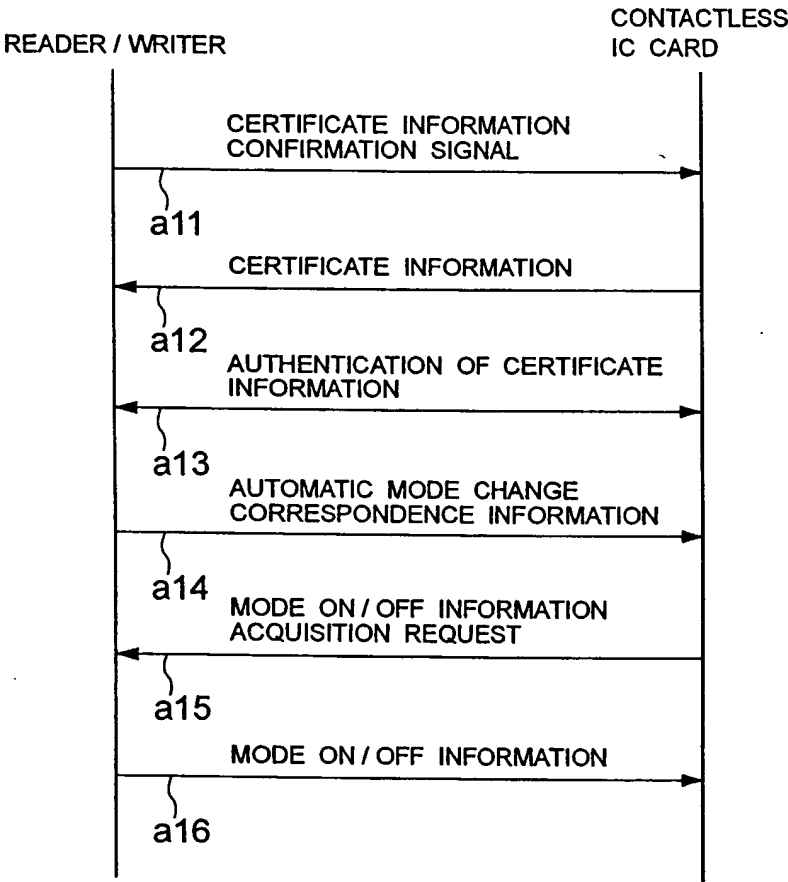
[FIG. 5]



[FIG. 6]



[FIG. 7]



[FIG. 8]

	MODE # 1	MODE # 2
SOUND VOLUME RELATION	OFF	OFF
VIBRATION	OFF	ON
OFFLINE	ON	OFF

MODE # 1 : HOSPITAL MODE  
MODE # 2 : CONCERT MODE

[FIG. 9]

